

Remarks

The Applicants acknowledge their earlier election of Claims 132-155. Claims 1-6, 84-131 and 156-157 have accordingly been withdrawn from consideration. The Applicants have cancelled Claims 1-6, 84-131, 156 and 157 without prejudice and without disclaimer of the subject matter therein. The Applicants specifically reserve the right to file one or more divisional applications directed to the subject matter of those claims.

The Applicants have amended Claim 132 by adding the subject matter of Claim 135. Claim 135 has accordingly been cancelled.

The Applicants have also cancelled Claims 151-155.

Entry of the above amendments and cancellations into the official file is respectfully requested.

The Applicants enclose a new Fig. 6 in response to the objection. Entry of new Fig. 6 into the official file is respectfully requested.

Claims 132-155 stand rejected under 35 USC §103 as being obvious over Chung. The Applicants note with appreciation the Examiner's detailed comments hypothetically applying Chung against those claims. The Applicants respectfully submit, however, that Chung is inapplicable for the reasons set forth below.

The Applicants' claimed subject matter relates to a nanofiber paper comprising disarranged nanofibers made of the thermoplastic polymer, and of 1 to 500 nm in the number average single fiber diameter and 60% or more in the sum Pa of single fiber ratios, wherein the freeness of the disarranged nanofibers is 350 or less. The Applicants note the Examiner's frank acknowledgement that Chung does not disclose the Applicants' claimed 60% or more in the sum Pa in single fiber ratios and the freeness of the disarranged nanofibers of 350 or less. The

Applicants agree. There is no such disclosure in Chung. In that regard, Chung is directed to different subject matter made in a different way. For example, Chung discloses in paragraph [0006] an improved polymeric material made of microfibers and nanofibers. The nanofibers have a fiber diameter less than 200 nm or 0.2 microns. Microfibers are fibers with a diameter of less than 0.2 microns, but not larger than 10 microns. Those fine fibers can be made in the form of an improved multi-layer microfiltration media structure. Those fine fiber layers, however, have a random distribution of fine fibers which can be formed into an interlocking net.

This is sharply contrasted to the Applicants' nanofibers which have a small distribution. The randomness of the Chung distribution is a problem relative to the Applicants' claimed subject matter which has a freeness of the disarranged nanofibers of 350 or less. The problem is that if the freeness is more than 350, the nanofibers will likely not be homogeneously dispersed in the resulting synthetic paper. This is a problem because it can result in differences in average pore area and density and affects permeability of the nanofiber paper.

This directly addresses an issue raised in the rejection with respect to preventing or allowing the passage of different size particles. The problem with the rejection is that it does not account for the homogeneity of the Applicants' nanofiber distribution versus the randomness that is present in Chung. The randomness means that in some areas, the pore area may be small versus other areas where it is quite large. This is sharply contrasted to the Applicants' claimed synthetic paper that has a consistent degree of homogeneity because of the claimed amount of freeness. This results in a far better ability to filter on a consistent basis relative to the Chung random fiber distribution.

The Applicants respectfully submit that Chung fails to disclose, teach or suggest this important aspect of homogeneity versus randomness. It is not simply a matter of the density of

the nanofibers as discussed in the rejection. It is also a matter of the homogeneity versus the randomness. This issue is not addressed at all in Chung. It inherently follows that there are no teachings or suggestions how to deal with homogeneity in view of the fact that it was not recognized in the first place.

There are additional issues in the Chung fibers which are produced by electrospinning. This is disclosed in various locations of Chung such as in paragraph [0004] and in Example 5 in paragraph [0083]. As a consequence, it can be seen from Chung that in the electrospinning process there is an irregular single fiber diameter. The Applicants also recognized this problem as can be seen on pages 9 and 10 of the original specification in paragraph [0019]. Thus, the irregular single fiber diameter is a problem that hinders homogeneity as well. However, the Applicants have addressed this issue by specifying the amount of freeness of the disarranged nanofibers at 350 or less so that the nanofibers are homogeneously distributed within the resulting nanofiber synthetic paper. This aspect is not disclosed, taught or suggested by Chung. Withdrawal of the rejection is accordingly respectfully requested.

The Action also contains four separate provisional double-patenting rejections over Application Nos: 11/587,128; 11/578,926; 11/489,606 and 10/532,082. Inasmuch as these double patenting rejections are provisional, the Applicants respectfully request that they be held in abeyance until the remaining rejections have been withdrawn.

In light of the foregoing, the Applicants respectfully submit that the entire application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'T. Daniel Christenbury', written over a horizontal line.

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